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Studies in lichens and lichenicolous fungi: more notes on taxa from North America 6

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Abstract — *Acarospora asperata* is placed in synonymy with *A. obnubila. Chiodecton subochroleucum* is placed in synonymy with *Roccellina franciscana. Lecanora phaeophora* is discussed. *Catillaria atomarioides, Echinodiscus lesdainii*, *Stigmidium ramalinae,* and *Thalloloma cinnabarinum* are reported new for North America.

Key words — *Acarosporaceae*, *Graphidaceae,* isohypocrellin, *Lecania cyrtella, Ramalina subleptocarpha*, *Schismatomma cupressum*

1. ***Acarospora obnubila*** H. Magn., Kungl. Svenska Vetensk.-Akad. Handl. Ser. 3, 7 (4): 263 (1929).

Type: **U.S.A. Arizona:** adamana, 1915, *Plitt* (MIN, holotype (not located); UPS! isotype).

= *Acarospora asperata* H. Magn., Göteborgs Kungl. Vetenskaps Vitterhets-Samh. Handl. 6(17): 17 (1956), **syn. nov.**

Type: **U.S.A. Colorado: Boulder Co.,** west side of steamboat mountain, 3 miles n.w. of lyons, on sandstone boulders, base of talus slope, 1707 m, 7.ii.1954, *W.A. Weber & S. Shuahan S1489* (COLO, holotype; FH! isotype).

Acarospora obnubila is distinguished by its brown squamules with a usually well-developed stipe, an algal layer interrupted by hyphal bands, and a lack of secondary metabolites (Knudsen 2008). The species was described from Arizona (Magnusson 1929), is common in California (Knudsen 2008), and has been reported in South America (Knudsen et al. 2008). *Acarospora asperata* is a well-developed specimen of *A. obnubila,* suggesting that some poorly developed specimens from southern California, at elevations below 700 meters, are at their ecological limits in the Mojave Desert and xeric microhabitats in the coastal ranges. A similar difference between specimens of *Acarospora elevata* H. Magn. (misapplied name *A. nitida* H. Magn.) can be observed. Specimens from Colorado and montane California above 1500 meters are well developed and glossy but the specimens from lower elevations from xeric microhabitats are often small and dull.

2. ***Catillaria atomarioides*** (Müll. Arg.) H. Kilias, Herzogia 5(3–4): 327 (1981).

≡ *Lecidea atomarioides* Müll. Arg., Flora, Jena 57: 187 (1874).

≡ *Catillaria lenticularis* var. *atomarioides* (Müll. Arg.) Erichsen, Flechten von Nordwestdeutschland: 153 (1957).

Type: **FRANCE. Hte Savoie:** "am salève südöstl. von monetier, auf errat. block", 1873, *J. Müller Arg.* (G, lectotype + isolectotype).

The genus *Catillaria* A. Massal. s. str is characterized by having lax, distinctly capitate paraphyses, *Catillaria*-type asci (completely amyloid tholus lacking a masse axiale), and colorless, 1-septate ascospores. Within the genus *C. atomarioides* is distinguished by its small apothecia (0.1–0.2 mm diam.), green-black throughout the true exciple, colorless hypothecium and small ascospores (7–10 × 2.5–3.5 µm).

Catillaria chalybeia (Borrer) A. Massal. is similar but has larger apothecia (typically 0.2–0.5 mm diam.), a higher hymenium (40–60 µm vs. 30–40 µm), and a dark brown hypothecium. *Catillaria subviridis* (Nyl.) Zahlbr. is also similar but has a colorless inner exciple and larger ascospores (10–16 × 4.5–6 µm).

Catillaria atomarioides was described from a specimen from France and has subsequently been reported from northern and central Europe, Macaronesia and South Africa (Fletcher & Coppins 2009). A full description and drawings of microscopic features are included by Kilias (1981). The single North American collection was made by Harold Schaefer during a field seminar at the Humboldt Field Research Institute in Steuben, Maine, led by one of us (AMF), who identified the collection.

Specimen Examined. – **USA. Maine: Washington Co.,** petit manan wildlife refuge. hollingsworth trail, near the coast, 44°27'27.4"N 67°56'4.4"W, 5 m, top of granitic rocks, *H. Schaefer 445,* 4.viii.2009 (FH, MSC, hb. Schaefer).

3. ***Echinodiscus lesdainii*** (Vouaux) Etayo & Diederich, Bull. Soc. Nat. Luxemb. 100: 64 (2000).

Type: **IRELAND. Fermanagh (VC H33): Enniskillen,** castle coole, gurtgonell plantation, on *Lecania cyrtella*, on *Sambucus* twigs, vii. 1993, *Coppins 15732 & O'Dare* (E, neotype; hb. Diederich, isoneotype).

≡ *Phacopsis lesdainii* Vouaux [as '*lesdaini*'], Bull. Soc. Mycol. France 30: 145 (1914).

Echinodiscus lesdainii is a lichenicolous fungus known from the apothecia of *Lecania cyrtella* (Ach.) Th. Fr., *L. cyrtellina* (Nyl.) Sandst. and on the thallus of *L. erysibe* (Ach.) Mudd in France, Great Britain, Ireland, and Sweden (Etayo & Diederich 2000). The ascomata are apothecioid, 50–100(–150) µm diam., with large simple hairs, an exciple and hymenium distinguished by a violet pigment, paraphyses intermixed with hairs and 4–spored asci, 36–40 × 7–8.5 µm, with simple hyaline ascospores 5.5–8.5 × 2.5–3 µm.

Echinodiscus lesdainii was collected in the Santa Monica Mountains in southern California on *Lecania cyrtella* growing on middle-aged *Malacothamnus fasciculatus* (Torr. & A. Gray) E. Greene in mesic chaparral in upper La Jolla Valley. We report the species new for North America.

Specimens examined. — **U.S.A. California: Ventura Co.,** santa monica mountains point mugu state park, upper la jolla valley, 34° 6' 37" N 119° 01' 46" W, 270 m, 13.vii.2009, *Kocourková 7344 & Knudsen* (hb. Kocourková).

4. ***Lecanora phaeophora*** (Stizenb. ex Hasse) H. Magn., Meddl. Göteb. Bot. Träg. 10: 52 (1935).

Type: **U.S.A. California: Los Angeles Co.**, Catalina Island, on rocks, i.1895, *Hasse* (ZT, holotype! FH, isotype).

≡ *Biatora phaeophora* Stizenb. ex Hasse, Erythea 4:108 (1896).

≡ *Lecidea phaeophora* (Stizenb. ex Hasse) Hasse, Contr. U.S. Natl. Herb. 17: 44 (1913).

Biatora phaeophora (Hasse 1897 & 1913) is only known from the type collected on Catalina Island in southern California. The species has not yet been re-discovered and the type was examined during a continuing study of California's insular lichen biota. Magnusson revised the species, making an accurate description, and transferred it to *Lecanora* (Magnusson 1935) and the ascus stain is *Lecanora*-type. In the short description in the original publication, based on Stizenberger's notes, Hasse gave the size of the simple hyaline ascospores as 16 × 7 µm (Hasse 1897). The actual size of ascospores was revised by Magnusson as 9–10(–11) × 5–6 µm (Magnusson 1935) which we verified as correct. The holotype is too small to sample for thin-layer chromatography. The thallus and apothecia are UV–. The apothecium examined was K–, KC– and epihymenium was K–. In a revision of the original description, Hasse added that the ecorticate epilithic thallus, which is very thin, is K+ orange and the epihymenium is K+ violet (Hasse 1913). These details are not based on the

holotype but on a specimen of *Lecania fructigena* Zahlbr. from the type locality collected by Hasse and misidentified as *Lecidea phaeophora* (W!). Recently, the description was expanded to include information on crystals, etc. (Ryan et al. 2004). The mature apothecia are biatorine, resembling as stated by Magnusson (1935) *Lecanora polytropa* (Hoffm.) Rabenh., and are quite small in diameter (0.3–0.6 mm). This would be a good search image. It was collected on a hard rock, volcanic or a metamorphic. We hope one day it will be recollected.

5. ***Roccellina franciscana*** (Zahlbr. ex Herre) Follmann, in Follmann & Huneck, Philippia 4: 119 (1979) [cf, Tehler 1983]

Type: **USA. California:** point lobos, san francisco, 1903, *Herre* 266 (FH, lectotype; isolectotypes in RH, NY, UC, UPS, US, W).

= *Chiodecton subochroleucum* Fink, in Hedrick, Mycologia 25: 313 (1933), **syn. nov.**

Type: **U.S.A. California:** "southern california", trees, *Pringle s.n.* (MICH!, holotype; ex herb. B. Fink # 10 879).

= *Schismatomma cupressum* Herre, Bryologist 55(4): 295 (1952).

Type: **U.S.A. California: Monterey Co.,** monterey, cypress point, on *Cupressus macrocarpa*, 1990, *Herre 121* (UC, lectotype; NY, UC isolectotypes).

Fink described *Chiodecton subochroleucum* from an undated collection made by Cyrus G. Pringle from "trees in southern California." The holotype is in MICH (ex herbarium of Dr. Bruce Fink, # 10879), along with another collection made by Hasse from "near San Diego" (Fink # 11892). Hedrick (1933) and Fink (1935) give the following description: thallus thin, yellowish-white; apothecia to 1.0 mm, adnate, round to irregular, disk flat, commonly white pruinose, hypothecium brown, extending under each apothecium into a stroma of the same color; ascospores 3-septate, hyaline, 19–27 × 5–6.5 µm. Neither published description gives spot-test reactions for the thallus. Examination of the holotype revealed this description to be substantially correct, although ascospores up to 30 × 8 µm were also observed and, in addition, the thalline margin was non-corticate and all thallus spot-test reactions were negative.

The holotype is clearly a specimen of *Roccellina franciscana* and so *C. subochroleucum* is included in the synonymy of that species. *Roccellina franciscana* is a coastal species known only from California and Mexico (Baja California) where it occurs on trees (and less often on rocks) as far north as San Francisco (Tehler 1983 & 2002).

Additional specimens examined. – **U.S.A., California: San Diego Co.,** near san diego, *Hasse* (MICH; ex herb. B. Fink # 11892).

Specimens of *Roccellina franciscana* examined. – **U.S.A. California: Monterey Co.,** monterey peninsula, cypress point, 17-mile drive, between pacific grove and carmel, on a dead sapling of *Cupressus macrocarpa*, 2.iv.1966, *W. Weber & R. Santesson* (MSC; Lichenes Exsiccati University of Colorado Museum, Boulder, Fasc. V. #

195 – as *Schismatomma cupressum*); ibid., CYPRUS POINT, 18.vii.1882, *unknown collector 656a* (MSC).

6. ***Stigmidium ramalinae*** (Müll. Arg.) Etayo & Diederich, Comun. Bot. Mus. Nac. Hist. Nat. Antropol., Montevideo 6(129): 14 (2004).

TYPE: **BRAZIL. APIAHY:** on *Ramalina complanata*, 1884, *Puiggari 357* (G).

≡ *Arthopyrenia ramalinae* Müll. Arg., Flora 66: 319 (1883).

≡ *Pharcidia ramalinae* (Müll. Arg.) Vouaux, Bull. Soc. Mycol. France 28: 254 (1912).

= *Pharcidia epiramalina* Vouaux, in Pitard & Harmand, Bull. Soc. bot. Fr. 58(Mem. 22): 71 (1911).

TYPE: **SPAIN. ILLES CANARIES: Tenerife,** MONT. TAGANANA, on *Ramalina decipiens*, *Dr. Pitard* (herbarium location unknown).

≡ *Stigmidium epiramalina* (Vouaux) Hafellner, Bull. Soc. linn. Provence 44: 230 (1994).

The species is widespread in South America in Argentina, Brazil, Uruguay (Etayo & Osorio 2004), and Chile (Etayo & Sancho 2008). The black ascomata are 40–50 µm in diameter, with external periphyses. We did not observe the periphysoids, which are described as "rudimentary" (Etayo & Osorio 2004). The asci are 20–25 × 8–9 µm with 1-septate ascospores 11.5–13.5 × 2.5–3.5 µm. *Stigmidium ramalinae* was collected on *Ramalina subleptocarpha* Rundel & Bowler in the Santa Monica Mountains and is reported new for North America.

SPECIMENS EXAMINED. — **U.S.A. CALIFORNIA: Ventura Co.,** SANTA MONICA MOUNTAINS POINT MUGU STATE PARK, UPPER LA JOLLA VALLEY, 34° 6' 37" N 119° 01' 46" W, 270 m, 13.vii.2009, *Kocourková 7342 & Knudsen* (hb. Kocourková).

7. ***Thalloloma cinnabarinum*** (Fée) Staiger, Bibl. Lichenol. 85: 432 (2002).

≡ *Graphis cinnabarina* Fée, Essai Crypt. Écorc. Officin.: 44 (1825).

TYPE: **PERU.** "HABITAT IN RAMIS JUNIORIBUS CINCHONARUM PERUVIANORUM" (G, HOLOTYPE).

≡ *Phaeographis cinnabarina* (Fée) Müll. Arg., Mémoir. Soc. Phys. Hist. Nat. Genève 29(8): 27 (1887).

Thalloloma cinnabarinum, in a broad sense, constitutes a group of five species that are separated from the rest of the genus by the presence of the red epihymenial pigment isohypocrellin that reacts K+ green and hyaline transversely septate rather than muriform ascospores (Staiger 2002). Within this group, *T. cinnabarinum* is further distinguished by its short 5–10 septate ascospores (25–40 × 6–8 µm fide Staiger 2002), which are I+ blue-violet, and rounded to oval ascocarps with an open disc and conspicuous red mealy margins (Staiger 2002). Sean Beeching recently sent one of us (JCL) a collection of this taxon from Georgia, USA and it appears to be the first record of the species from North America. No other species of *Graphidaceae* presently known from North America combines the presence of isohypocrellin in the epihymenium with the other suite of characters given above.

Specimen Examined. – **U.S.A. Georgia: Brantley Co.**, long branch tract, 11.iv.2009, *S.Q. Beeching* s.n. (NY 1080278).

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